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TECHNICAL ADVANCES IN RADIO COMMUNICATIONS IN COMMUNIST CHINA

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## FOREWORD

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## TECHNICAL ADVANCES IN RADIO COMMUNICATIONS IN COMMUNIST CHINA

Following is a translation of selected articles from the Chinese-language periodical Wu-hsien-tien (Radio), Peiping, Date of issue, page, and author are given under individual article headings.

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I. THANK THE SOVIET UNION, EMULATE THE SOVIET UNION, PROCEED ON  
A SUCCESSFUL FOUNDATION

No 2, February 1960  
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Chou Feng-ming

Sino-Soviet relations have been mutually beneficial for 10 years. I and the employees of my plant especially wish to extend our heartfelt thanks to Soviet specialists and other Soviet comrades who helped to establish our plant and moreover we wish to thank the Soviet government.

Our plant was constructed with Soviet aid. During the period of plant construction, many specialist under the leadership of A. M. Mei-erh-chin, head construction engineer, and I. I. K'a-ming-assu-chi, head electron tube manufacturing engineer, both of whom wholeheartedly assisted in the design and manufacture of plant buildings, the installation of equipment, control, trial manufacture, and trial runs. Many of our employees were sent to the USSR to study. With such unselfish Soviet aid, in a comparatively short time our plant can basically grasp the production techniques of electronics. Since the beginning of production in October 1956, we have fulfilled our trial manufacturing task ahead of schedule. Since the beginning of production the USSR has continued to assist us. Many Soviet specialists after returning to Russia have corresponded with our workers, assisting us in solving many production and technical problems. During the great leap forward of 1959, our plant was to trial manufacture a batch of large-scale electron tubes. Soviet large-scale electron tube expert F. A. Wa-hsi-li-yeh-fu, not only assisted us in design, the improvement of structure, and in production techniques, but also each day personally visited the shops helping us to solve various production and technical problems on-the-spot. Such assistance enables us under poor technical conditions and with inadequate experience to meet the production task for these large-scale tubes on time and with proper quality. Through his expert proposals, production times were decreased and the degree-of-vacuum and tube quality along with productivity were progressively raised. The USSR further sent metal-porcelain tubes and experts in this field to assist us in very rapidly solving problems in the sealing of metal and porcelain.

I and all of the plant workers cannot express all of the unselfish aid given us by the USSR. The effect of all of it has strengthened the bond between our two countries. The Soviets are our pattern for study. Party leadership and continued Soviet assistance has enabled our plant to continue overfulfilling state tasks so that in 1959 we became a "red banner" plant. Production progress by our plant in the last few years has been great. For example, total value of production in 1958 was 3.34 times that of 1957 and in 1959 was 1.2 times that of 1958. By the end of 1959 our production level had greatly surpassed the planned

production capacity. The actual annual production of electron tubes in 1958 was 84 percent above norm.

We have just entered 1960 and our plant again continues to progress. We firmly believe that under party leadership and with the assistance of Soviet advanced experiences, we certainly can on the basis of past successes attain even greater victories.

## II. SERVICING THE TU250/1000 WIRED BROADCAST TRANSMITTER\*\*REPLACING 805 TUBE WITH A 211 TUBE

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Lo-Sen-fa

If a TY 250/1000 has an 805 Tube failure and none is available, a 211 tube can be substituted. This is possible because the characteristics of the two electron tubes is quite similar, bases are similar, the replacement simple, and the substitution can be made without greatly affecting broadcasting. When the 805 tube is again available, the original curcuit can be renovated in a short time. Our station has tested such a tube substitution and the results have been very good regardless of whether concerning output power or sound fidelity.

The characteristics of the 211 tube are shown in the following chart:

filament voltage	10 volts
filament current	3.25 amps
grid deviation voltage	-100 volts
grid to grid peak voltage	410 volts
screen voltage	1250 volts
screen current (two tubes)	20/320 milhiamps
screen to screen resistance	
load	9000 ohms
grid input power	8 watts
output (two tubes)	260 watts

### Method of revision:

1. The filament voltage, current and screen voltage of the 211 and 805 tubes are similar, when the substitution is made it requires only that the connection for the screen cap of the 805 tube be soldered down and the connecting wire by connected with one of the empty pins of the 8-5 tube base, then to the screen of the 211 tube.

2. The grid exciter transformer, TP 2-2, taps to pins No 2 and 3 are to be connected to pins No 2 and 3 to provide grid deviation voltage.

After the revision is made the curcuit must be checked for errors. While testing under normal or simulated load, a anmeter should be used to control the testing and to determine if the screen current of the 211 tube is too great or too little. If the meter shows the grid deviation voltage to be incorrect, the voltage can be adjusted to -100 volts.

· III. NANKING ELECTRON TUBE PLANT MAKES TECHNICAL REFORMS, FULFILLS  
JANUARY PLAN AHEAD OF SCHEDULE

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Huang Ming-shou

In their first reply to the proposals of the Peiping Electron Tube Plant and those of the workers of Nanking, the workers of the Nanking Electron Tube Plant during January of this year greatly launched a production technical reform movement. It was manifested in over 600 large and small proposals, and it also prompted the overfulfilling of the January plan by 10 percent, four days ahead of schedule.

The plant continues to advance and in 1959 was made a "red banner" unit of the First Ministry of Machine Industry. Last year's national plan was overfulfilled and represented a more than 100 percent increase in total production value over 1958. Compared with 1959 it was an 8-fold increase. The total production value plan was 102.71 percent completed. Of this the section on high-priority tubes was 148.10 percent completed, transistors was 123 percent completed, and the trial manufacture and putting into production of new products was also overfulfilled.

This is a year of great progress for the radio industry. The leap forward plan for the plant for this year will show a 50 percent increase in total value of production, a 40 percent increase in output, a 45 percent increase in labor productivity, a rate of over 90 percent in interchangeability of products, and a 10 percent reduction in costs.

They wish, in order to manifest the completion of such a full-scale leap forward plan, to start 1960 off with a "bang". The plant leadership cadre have entered the shops to help solve key problems. Emulations have been proposed. A team in Shop No 1 has already overfulfilled its monthly quota by 30 percent and a planer operator, by utilizing a new cutter, has increased his efficiency 6-fold.

After receiving the honor of becoming a "red banner" unit, the plant workers have set about to produce more and better electron tubes to satisfy the state needs. The party committee established a production research unit and strengthened plan control and technical control during the first part of January. A system of weekly, daily, and hourly plan inspections will be carried out at the plant, shop, section, and team levels. A technical reform movement involving daily individual worker emulation, three-day team emulation, weekly section emulation, and semi-monthly shop emulation was begun. Parts Shop No 1 began such emulation and resulted in a 5 percent overfulfillment of the monthly plan in just 11 days. The press team of this shop also improved its methods to the extent that the productivity quota was 400 percent fulfilled. The refining team overfulfilled its monthly plan by 24 percent in just 24 days. Other such accomplishments included a new type triode going into production 2½ months ahead of schedule.

#### IV. PROMOTE MASS MOVEMENT FOR TECHNICAL REFORM, RAISE THE QUALITY OF RADIO COMMUNICATIONS

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Liu An and Cheng Te-hai

The radio communications industry has improved communications equipment, manufactured new technical equipment, greatly raised the number of circuits, reduced breakdowns, and increased the equipment utilization rate. Technical maintenance has also gradually been progressing towards semi-automation and automation. Many radio circuits have been opened using domestic equipment. Our radio communications have developed the use of telegraph lines, telephone line side bands, and ultra-short wave multi-circuits in increasing the capacity of our radio circuits and hence satisfying the demands placed on our radio communications industry.

Captions:

1. The 1-kilowatt single side-band transmitter manufactured by the Shanghai Post and Telecommunications Control Bureau, Radio, Control Office.
2. A model 8-8 "shift-frequency-machine" (literal translation) has been reworked by the Peiping Long Distance Telecommunications Bureau Receiving Station into both "split" and single use. Utilizing it as a single, it can receive two messages at the same time. This photo shows representatives of the All-China Radio Communications "One Dragon" Emulation and Technical Reform and Technical Reformation Conference inspecting such a technical innovation.
3. Automation of radio switches. When receiving, the switches automatically open and when sending, they close automatically, thereby reducing manpower required and also reducing the chance for error.
4. A small inspection station in a machine shop. Prior to the establishment of the inspection station much time was spent by machine attendants rushing back and forth. Now they can sit at the inspection station, greatly reducing the number of attendants needed.
5. The Peiping Long-Distance Telecommunications Bureau Transmitting Station has added an automatic "restoring" device on its 60-kilowatt transmitter to reduce circuit resistance. This is technician Wang P'ei-ying installing the device.